



SPECIAL AIRWORTHINESS INFORMATION BULLETIN

SUBJ: AUTOPILOT FLIGHT DIRECTOR SYSTEM: ALT HOLD Engaged
on Takeoff on Boeing Model 777/787 common fleets.

SAIB: AIR-22-09
Date: April 12, 2022

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin is to advise registered owners and operators of **The Boeing Company Model 777-200, -200LR, -300, -300ER, and 777F series airplanes, and Model 787-8, -9, and -10 airplanes** of the potential for mismanagement of the Flight Management Annunciation (FMA) system on takeoff due to Autopilot Flight Director System (AFDS) being latched in altitude hold (ALT) mode.

Background

In-service reports have been received from operators of the affected airplanes where the AFDS altitude hold ALT hold mode was erroneously engaged during takeoff. One recent event resulted in an unusually low initial rate of climb. Another recent event resulted in a slight descent after takeoff, triggering a ground proximity warning system (GPWS) "Don't Sink" caution message. Once airborne, the flightcrews pushed the Take Off/Go Around (TO/GA) switch to restore proper pitch guidance. Review of flight data from the reported events showed the activation of ALT pitch mode prior to takeoff without the crew's recognition.

When the airplane is on the ground and the Flight Director (F/D) is initially turned on, the default roll and pitch mode is TO/GA. On the ground, transition of the pitch mode from TO/GA to ALT can be induced in the following ways:

For 777s:

- The F/D ON when the Mode Control Panel (MCP) selected altitude is within 20 feet of the displayed barometric altitude.
- Inadvertent selection of the Altitude Hold Switch on the MCP.
- Inadvertent selection of the Flight Level Change (FLCH) switch, Vertical Speed/Flight Path Angle (VS/FPA) switch when the MCP selected altitude is within 20 feet of the displayed barometric altitude.
- Initiating a re-alignment of the Air Data Inertial Reference System (ADIRU) when a Flight Director is ON and the MCP selected altitude is within 20 feet of the displayed barometric altitude.

For 787s:

- Inadvertent selection of the Altitude Hold Switch on the MCP.
- Inadvertent selection of the FLCH, VS/FPA when the MCP selected altitude is within 20 feet of the displayed barometric altitude.
- The Flight Director is ON with the Inertial Reference System (IRS) OFF (including during initiation of IRS alignment), and the MCP selected altitude is within 20 feet of the displayed barometric altitude.

If in ALT mode while on the ground, pressing TO/GA switch will have no effect on pitch mode or guidance. Selecting both F/Ds “OFF” then “ON” while on the ground will restore intended, default TO/GA pitch guidance. In the scenario where the MCP selected altitude is close to the displayed barometric altitude and system in ALT hold mode prior to takeoff, the AFDS will provide nose-down pitch guidance just after liftoff. Once airborne, pressing TO/GA switch will restore TO/GA pitch guidance.

While altitude hold latching and TO/GA behaviors are described in the Boeing Flight Crew Operations Manual (FCOM), this specific scenario is not explicitly described. It is apparent that this specific system behavior may not be known to all pilots of these aircraft.

The Boeing Company issued Multi Operator Messages (MOM) MOM-MOM-22-0119-01B (777), dated March 4, 2022, and MOM-MOM-22-0118-01B (787), dated March 4, 2022. These MOMs provide information about this concern and operating instructions for normal AFDS operation during takeoff. These include procedures for how to return to TO/GA on the ground after ALT was latched and instructions to reinforce existing procedures and training.

The flightcrew should maintain situational awareness of FMAs to ensure appropriate FMAs for the phase of flight.

The behavior of the altitude hold and TO/GA switch logic for The Boeing Company Models 747-400 and 747-8 series airplanes, Model 757 airplanes, and Model 767 airplanes is still being evaluated. To date, there have been no similar reports on these models. For that reason, this SAIB is focusing on the 777 and 787 models.

Recommendations

The FAA recommends that all owners and operators of affected airplanes notify flightcrews of this issue and incorporate the actions outlined in the applicable referenced MOMs at the earliest opportunity.

For Further Information Contact

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